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THE GEOGRAPHICAL CHARACTERISTICS OF WESTERN FRANCE

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In the harmonious assemblage of regions that constitute France the individuality of the separate units is clearly recognized in the common parlance. Most highly individualized without doubt is that known as the "West." The word is vague, but its connotation is precise. The country folk know well enough where the West begins. The plains round Évreux, Chartres, Châteaudun, Vendôme, Tours, Poitiers lie on its border, but they are not of the West. Lieuvin and the *pays* of Auge, Perche, eastern Anjou, and the Vendée are included within its limits. We shall later consider in detail the significance of this limit; what concerns us immediately is the extraordinarily clear-cut nature of the boundary, a fact the more astonishing in that it corresponds to no geological or morphological boundary but without apparent reason cuts across uniform terrains. Outside the boundary regional change is marked; within one finds a prevailing uniformity only modified on approach to the sea. This uniformity is attested by physical and human characteristics alike.

The Morphological Characteristics of Western France

From the point of view of physical geography the West is a unit. It presents a slightly accidented surface without sizable plains or forms of strong relief. The greatest elevations scarcely exceed 400 meters (417 meters in Bas-Maine, 391 in Brittany, 285 in Vendée); the limited areas of level land are found for the most part in the valleys. The general aspect of the country is that of an undulating plateau.

THE BORDER OF THE WEST: THE CLAY-WITH-FLINTS PENEPLAIN

Approaching the West from the Paris Basin by way of Évreux, Chartres, or Châteaudun, for example, one rises slowly and regularly to the surface of a great plateau, almost completely level and unbroken by large valleys. It is interrupted by a sharp rise whose steep slopes mark the highest altitudes. From 120 meters it rises southward to 309 meters in the "Monts d'Amain," then sinks to 200 meters and less. In the region of Le Mans the edge of the plateau has been greatly dissected and the height is no more than 120 to 80 meters.

The plateau surface does not correspond to the outcrop of a layer of hard rock. It is not a structural plain but an erosion surface, an old peneplain. From edge to edge it bevels in succession the tilted layers of the Upper Cretaceous, Cenomanian, Turonian, Senonian. The surface is constituted by a residual layer, clay-with-flints derived from superficial weathering of the chalk. The peneplain can be dated by the occurrence on its surface of unconformable fragments of an Eocene covering, the most ancient beds of which are Sparnacian; the clay-with-flints peneplain dates then from the end of the Cretaceous or the beginning of the Tertiary. The present inclination of this ancient peneplain is relatively great; the original slope was evidently much gentler. Examination of the present altitudes shows that it has suffered deformation by uplift which affected in particular those parts now most elevated. This uplift originally extended to the western limit of the plateau; the break of slope which bounds it corresponds to a sunken zone scarp more or less worn back in places by the ordinary processes of erosion.

The Armorican Peneplain

Let us now turn farther westward, to Bas-Maine. This is a region of primary rocks, greatly folded and showing granitic intrusions. The folds have been worn down to their base; prolonged erosion has reduced the region to a peneplain. It now presents the form of slightly accidented plateaus, clearly distinguishable on the topographic map and easily visualized as parts of a continuous plain. Here and there upon the surface appear Eocene sediments resting discordantly upon the worn primary terrain. This peneplain, as I have shown elsewhere in detail,[1] is the result of an almost complete base-leveling. It dates from the end of the Cretaceous or the beginning of the Tertiary.

It is similarly developed over the other ancient terrains of the Armorican massif—in the Norman Bocage and in Cotentin to the north, in Anjou to the south, and westward in Brittany, where M. de Martonne has proved its existence.[2] The entire area exhibits levels of the same aspect and of the same age formed under the same conditions. Over the surface throughout are scattered numerous fragments of Eocene deposits, notably in Brittany.[3]

The peneplain of Bas-Maine is only a portion of a great peneplain involving all the Armorican massif and hence known as the Armorican peneplain. On the periphery of the massif it can be traced beyond the outcrops of ancient rocks on the secondary rocks of the border, truncating their layers obliquely and in places carrying on its surface Eocene deposits. Where chalk existed whether of Cretaceous age, as in the case of the clay-with-flints peneplain, or of Jurassic age, its surface is composed of clay-with-flints.

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[1] René Musset: Le Bas-Maine, Paris, 1917.

[2] Emmanuel de Martonne: La pénéplaine et les côtes bretonnes, *Ann. de Géogr.*, Vol. 15, 1906, pp. 213–236 and 299–328.

[3] The Eocene fragments in Brittany are generally omitted from the geological map, scale 1 : 80,000.

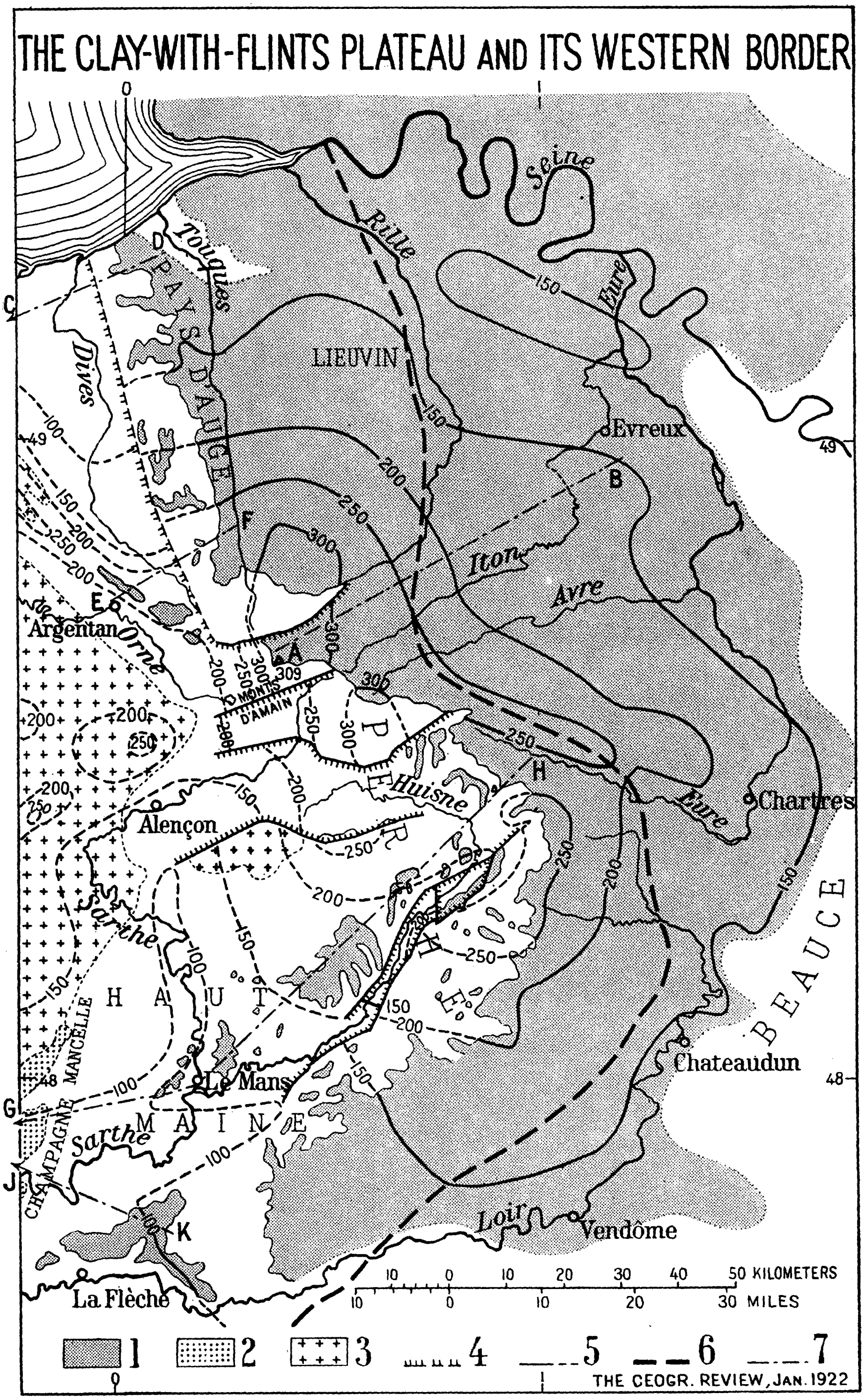

FIG. 1—The clay-with-flints plateau and its western border. Reference to numbers in key: 1, clay-with-flints on Cretaceous rocks; 2, clay-with-flints on Jurassic rocks; 3, ancient terrain of the Armorican massif; 4, faults (cross lines indicate direction of downthrow); 5, lines of sections shown in Figure 2; 6, western limit of *bocage* and the "West"; 7, contours of the peneplain of western France (figures give altitude in meters). Scale approximately 1 : 1,300,000.

Relation Between the Clay-with-Flints and the Armorican Peneplains

The clay-with-flints and the Armorican peneplains are contemporaneous. On the surface of both appears clay-with-flints, especially on the former.

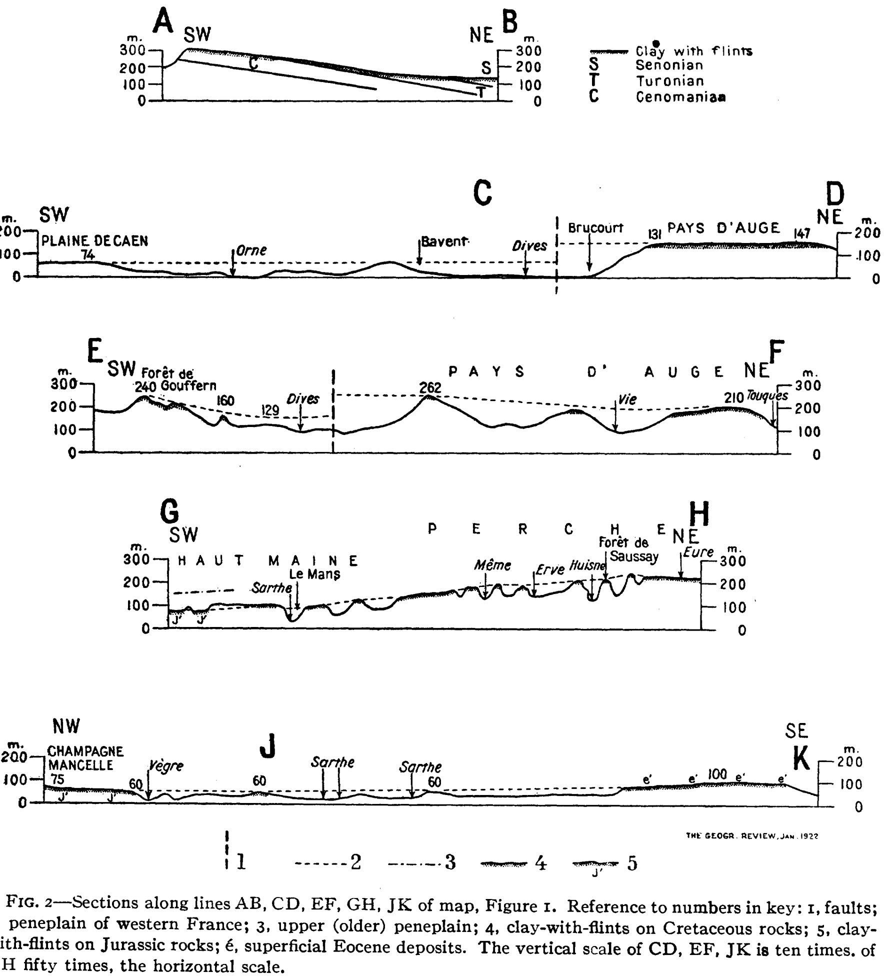

FIG. 2—Sections along lines AB, CD, EF, GH, JK of map, Figure 1. Reference to numbers in key: 1, faults; 2, peneplain of western France; 3, upper (older) peneplain; 4, clay-with-flints on Cretaceous rocks; 5, clay-with-flints on Jurassic rocks; é, superficial Eocene deposits. The vertical scale of CD, EF, JK is ten times, of GH fifty times, the horizontal scale.

Do they not then represent two portions of a single plain? From the English Channel to the Loire they are separated by a continuous depression. It is marked by the valley of the Dives, then by the broad depressed zone of Perche and Haut-Maine, and finally by the long *couloir* which corresponds for the most part to the course of the Sarthe downstream from Le Mans. Along this depression, as we have seen, the clay-with-flints peneplain falls abruptly with a sharp break of slope; but beyond it occur little plateaus, or hill summits, capped by clay-with-flints, evidently remains of a prolongation of the clay-with-flints peneplain, although at a lower altitude. At the same time they effect a junction with the Armorican peneplain.

The regions of Perche and Maine furnish the best illustration (map, Fig. 1, and sections, Fig. 2). The uplift which affected the region and which is still distinguishable in the part of the clay-with-flints plateau that has been preserved had for its result here in consequence of its intensification a foundering of the entire key of the arch. The Perche appears as a depressed area, cut by numerous faults, trending roughly east-west or southwest-northeast, variable in downthrow and magnitude. Between the faults are plateaus and hills crowned by clay-with-flints and Eocene fragments similar to those of the clay-with-flints peneplain but lower in altitude; they are in fact *buttes-têmoins* standing at a lower altitude because they have participated in the general depression of the region. Along a section from the Upper Eure to Le Mans parallel to the Huisne the clay-with-flints peneplain has an altitude of 220 meters on the Eure, on its border it rises to 240 meters, then it only appears as *buttes-têmoins* at altitudes of 220, 200, 180–160, 140, and finally 120–110 meters above Le Mans. Beyond Le Mans to the west of the Sarthe clay-with-flints of Cretaceous source are seen at 100 meters elevation. This surface is prolonged westward by clay-with-flint deposits of Jurassic source and of the same altitude in the Champagne mancelle. Now the Champagne mancelle in its turn passes without any break of continuity in Bas-Maine into the Armorican peneplain, which northeast of Laval has an elevation of 120–160 meters. The Champagne mancelle here corresponds to the lowest part of the depression. Analogous facts are observed farther north at the foot of the *côte* of the *pays* of Auge and again in the region between Le Mans and La Flèche.

It appears then that the clay-with-flints and Armorican peneplains are in fact portions of a single peneplain which we may call the peneplain of Western France, but they are separated by a zone of subsidence. This zone divides the West into two distinct parts. To the east is the clay-with-flints plateau adjoining the Paris Basin region; to the west is the Armorican massif with its marginal areas. The depression constitutes an important passageway providing a route for the chief north-to-south lines of traffic in the West. It is used by the roads and railways from Caen to Angers. At the points where these roads are crossed by east-west roads are situated a series of important towns, Caen, Alençon, Le Mans, Angers.

DEFORMATION OF THE PENEPLAIN OF WESTERN FRANCE

The peneplain of western France, dating from the end of the Mesozoic or the beginning of the Tertiary, has been deformed by subsequent movements. The topographic map makes this clear. It shows the upwarping of the great clay-with-flints plateau by an epirogenic movement which attained its maximum effect where elevations are greatest, to the south of the *pays* of Auge and to the northwest of Perche. The zone of concomitant subsidence now occupied by the valley of the Dives, Perche, and Haut-Maine and the valley of the Sarthe has already been pointed out. Two other depressions may be distinguished with equal ease. One is along the valley of the Loire upstream to Blois, the other across Upper Brittany from the mouth of the Loire and of the Vilaine to the English Channel about St. Malo. In both occur the calcareous shelly sands known as *faluns* deposited during invasion by the Miocene sea. Both depressions are followed by roads and railways, and the Vilaine depression also by the Ille-Rance canal. Large towns are naturally situated there—Angers and Nantes in the Loire valley, Rennes in the Breton depression. Finally there is another depression which was also invaded by the Miocene sea, the *col* of Cotentin, isolating the northern part of this peninsula from the Armorican massif (Fig. 4).

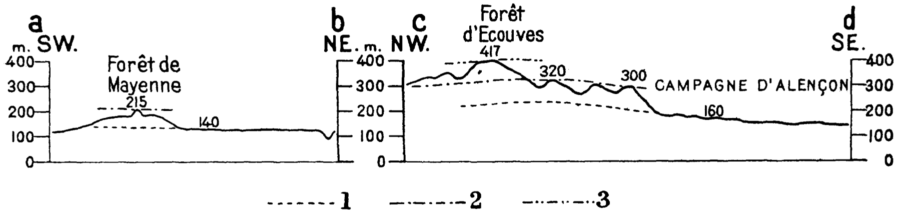

FIG. 3—Sections across Bas-Maine (ab) and the Campagne d'Alençon (cd). Reference to numbers in key: 1, peneplain of western France; 2, 3, older peneplains. The vertical scale is ten times the horizontal scale.

Between these depressed areas the inverse movement has created the more elevated areas, the north of Cotentin, the Norman Bocage, Bas-Maine, Lower Brittany,[4] Vendée, the most isolated and least accessible parts of the West.

IRREGULARITIES OF RELIEF ABOVE AND BELOW THE PENEPLAIN OF WESTERN FRANCE

In these elevated and isolated regions the peneplain of western France, though it constitutes the fundamental physical feature, does not occupy the entire surface. Above it in detached areas of more elevated relief are seen fragments of older peneplains; below are evidences of erosion at a lower level in a more recent cycle.

In Bas-Maine to the east of Mayenne rising above the major peneplain, which here has an altitude of 120–140 meters, is the narrow steep-sloped ridge of the Forêt de Mayenne, 200–215 meters in height. The level surface bevels old folded rocks. Similarly about the upper course of the Mayenne, where the major peneplain rises towards the south from 120 to 160 meters altitude, is seen another fragment of the older peneplain at an altitude of 240 meters.

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[4] The terms Upper and Lower Brittany (Haute-Bretagne, Basse-Bretagne) have no reference to altitude: they originated in the relatively greater or lesser importance of the areas (the case of Haut-Maine and Bas-Maine is similar).

Above the level of this older peneplain rise narrow ridges, elongated, bounded on all sides by abrupt slopes with level summit surfaces often followed by trails. Such are the heights of the *forêts* of Multonne, Pail, Écouves, La Ferté, Andaine. They are the remains of a still more ancient peneplain now highly fragmented. These monadnocks owe their preservation to the resistant qualities of the constituent rock, Armorican sandstone for the most part. They form the highest elevations of the West, 417 meters in the Forêt d'Écouves and the summit of the Avaloirs in the Forêt de Multonne.

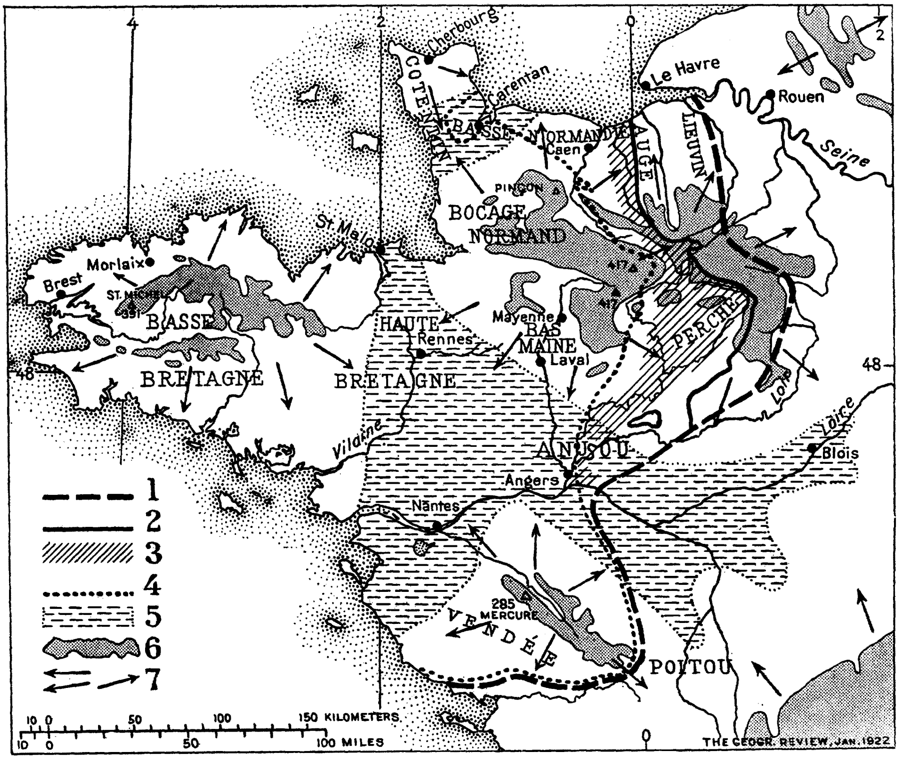

FIG. 4—Map of the West of France. Reference to numbers in key: 1, eastern limit of the *bocage* and the "West"; 2, western limit of the clay-with-flints plateau; 3, depressed zone at the foot of 2; 4, eastern limit of the ancient terrains of the Armorican massif; 5, area invaded by the *faluns* sea of Miocene times; 6, land above 200 meters altitude; 7, direction of slope of the peneplain surfaces. Scale approximately 1 : 4,400,000.

Fragments of these two ancient peneplains may be distinguished in the Norman Bocage. The Mont Pinçon area offers a striking example. The major peneplain, which here rises from north to south from 100 to 200 meters, terminates abruptly against a steep slope leading to another level surface strung along the edge of which is a series of villages—Ondefontaine, Roucamp, Campandré, St. Martin; it is the lower of the two older peneplains. The higher peneplain is seen in Mont Pinçon, a flat-topped butte of

360–365 meters, an admirable observation post for the study of the facts here described. On the summit Cenomanian rocks appear, beveled by the surface of the peneplain, which is thus dated as posterior to this formation. Thus the three successive peneplanations which have left their traces in the relief of western France took place between the Cenomanian and the early Tertiary.

In Lower Brittany the three peneplains are developed about Montagne d'Arrée for example. The youngest peneplain has an altitude of 80 meters at Morlaix and rises towards the south to 140 meters where it is dominated by more elevated buttes, the fragmented remains of the older peneplain with an altitude rising from 220 to 280 meters about Plounéour-Menez.

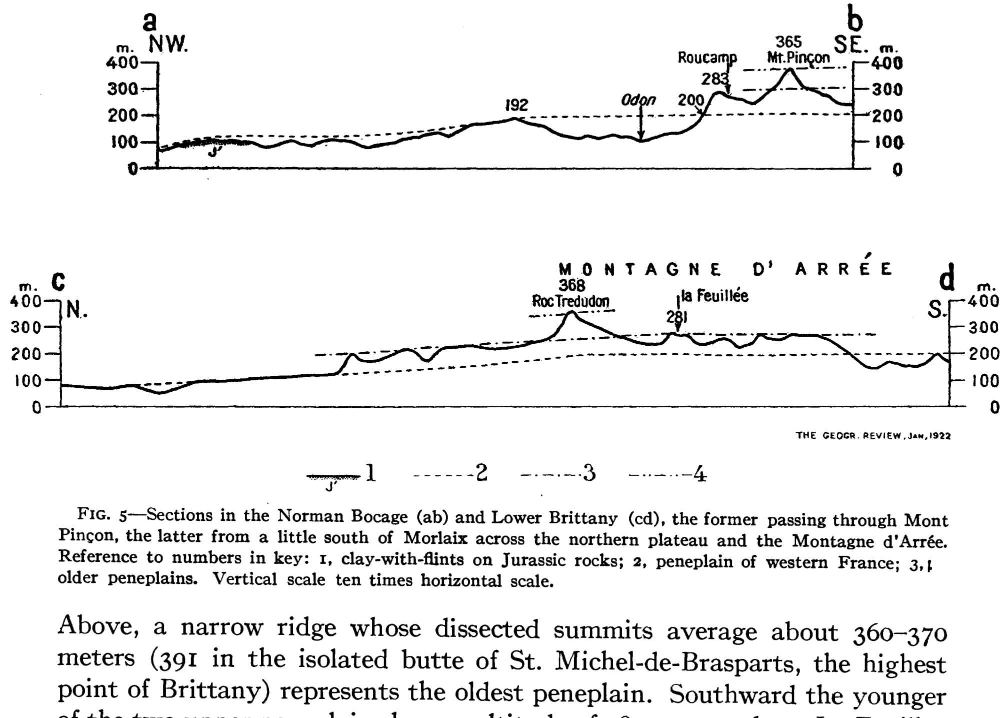

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FIG. 5—Sections in the Norman Bocage (ab) and Lower Brittany (cd), the former passing through Mont Pinçon, the latter from a little south of Morlaix across the northern plateau and the Montagne d'Arrée. Reference to numbers in key: 1, clay-with-flints on Jurassic rocks; 2, peneplain of western France; 3, 4 older peneplains. Vertical scale ten times horizontal scale.

Above, a narrow ridge whose dissected summits average about 360–370 meters (391 in the isolated butte of St. Michel-de-Brasparts, the highest point of Brittany) represents the oldest peneplain. Southward the younger of the two upper peneplains has an altitude of 280 meters about La Feuillée and the marshes of St. Michel, a region of topographic senility and poorly organized drainage; whence a rapid descent leads to the youngest peneplain.

In the Vendée two peneplains can be recognized, and in some isolated summits such as Mont Mercure (285 meters) the fragmented remains of the third. In northern Cotentin, however, are only two peneplains. From the *col* of Cotentin the youngest peneplain rises from 50 to 100 meters, where it terminates in steep cliffs along the shore. Above are the heights of La Hague, 170–180 meters.

Below the level of the peneplain of western France are the young valleys and plains developed in the course of a recent cycle (or cycles) of erosion, due to changes in relative level between land and sea. The contrast between the different parts of the West is very clear in this respect. To the east on the great clay-with-flints plateau (an impervious layer resting upon pervious chalk) valleys are not numerous, and only the principal rivers are entrenched. Some of the streams, the Avre and Iton for instance, have a tendency to lose their waters by infiltration in the underlying porous limestones; and the work of subaerial erosion is thus retarded. The peneplain, almost entirely cleaned of later Tertiary deposits, is preserved in a state of great perfection. On the impermeable surface of the Armorican massif, on the contrary, the rejuvenated streams have begun dissection of the peneplain, transforming it to a surface irregular in detail. Entrenched valleys are numerous; such are, in Bas-Maine, the Sarthe between St. Ceneri and Beaumont and the Mayenne below the confluence of the Varenne; and, in Brittany, the Vilaine below Rennes and the lower parts of all the coast streams. In every section of their course the valleys show characteristics of youth. In Lower Brittany popular speech distinguishes between the *traon*, narrow, steep-sided valleys originating in the present cycle of erosion, and the *toul*, marshy valleys of ill-organized drainage in the upper courses not yet attacked by the revived forces of erosion. In the intermediate depression, between the clay-with-flint plateau and the Armorican massif, tectonic subsidence has facilitated the work of erosion; and large valleys such as those of Dives, Huisne, and the lower Sarthe have developed. Where subsidence has been greatest, and the rocks are little resistant, enlargement of the valleys has proceeded until they are expanded into genuine plains, such as that of the Dives or the "Vallée d'Auge" or of the middle Sarthe or the *pays manceau*, this latter on friable Cenomanian sands. On the areas invaded by the Miocene sea there are also large valleys or little plains, such as the "Gulf" of Carentan in Cotentin, the valley of the Loire, and the depression known as the "Basin of Rennes."

A final episode in the morphology of the region is a series of very recent movements of coastal subsidence as result of which the erosive activity of the rivers has been diminished and the lower ends of the valleys have been invaded by the sea. Thus have been formed the Breton rias and that extreme indentation of coast line that has contributed so greatly to the encouragement of maritime pursuits and the multiplication of ports along the Breton coast. All the valleys of the western rivers have a submarine prolongation, not only those of Brittany but also, for example, those of the Loire, Vilaine, and Orne.

Human Geography of Western France

Study of the human geography of the region strengthens the impression of uniformity created by study of the morphology. It is, indeed, largely dependent on two physical facts which carry a train of consequences for human life: the impermeable soil and the humid, oceanic climate.

IMPERMEABILITY OF THE SOIL

The West shows great variety in the age and composition of its constituent rocks, crystalline and primary in the Armorican massif, secondary (Jurassic and Cretaceous) in the eastern section. The older rocks are impermeable save over limited areas of limestone and sandstone, become semi-permeable through fissuring. The younger rocks are also impermeable; clays predominate; limestones are marly or superficially covered with clay-with-flints; sands are rare. There are, however, more extensive areas of bare limestone which form little regions distinctly drier and locally known as *plaines*. Thus, though the West is varied as regards the nature and age of its rocks, it is uniform in respect of that important physical quality, their impermeability. From this springs one of the most striking features in the physiognomy of the country—its humidness, or freshness; for in addition to impermeable soil there is a rainy climate.

THE HUMID, OCEANIC CLIMATE

The West is strongly exposed to maritime influence by its position, well advanced into open ocean; its terminal, Brittany, is a peninsula surrounded on three sides by the sea. The dominant westerly and southwesterly winds, charged with moisture, bring abundant precipitation to the land. This fact need not be enlarged on here. A highly detailed study of the rainfall of western France has been made by M. Angot.[5] A few figures will suffice as illustration. The total annual precipitation everywhere exceeds 600–700 millimeters. Heavier rains fall on the peninsulas directly exposed to the winds. The western extremity of Brittany has 800–900 millimeters, the north of Cotentin over 800. The more elevated parts receive still heavier rains: the heights of Lower Brittany, of the Norman Bocage, and of Bas-Maine have over one meter; the rainiest stations are La Feuillée in the Montagne d'Arrée (1,181 millimeters), Edern in the Montagnes Noire (1,173 millimeters), Beauficel in the Norman Bocage (1,133 millimeters). The rains are evenly distributed throughout the year. Even in summer, when the least rainfall is registered, and at considerable distances from the sea the amount is considerable. Thus Laval, at an altitude of 60 meters, has the following monthly rainfall (average for 1851–1900):

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
61	49	50	46	54	62	55	51	53	67	66	68	682 mm.

For the region as a whole the ratio between the rainfall of the rainiest and driest months is about 3 to 2, and even in the western part it scarcely surpasses 2 to 1, low values. The essential fact, however, is not so much the rainfall as the humidity. Violent showers are rare. Precipitation is generally in the form of slow and gentle rains, which leave but little trace in the rain gage though they saturate the air, or in the form of fogs, of which the *crachin* of Brest is typical. Under the humid atmosphere the contours of the landscape are softened, and the penetrating moisture gives a pervasive air of freshness. This is so even in the least humid part, the southeast. At La Flèche, for example, where the exceptionally low rainfall of 541 millimeters would lead one to expect a drier country, the frequent drizzles are such that visiting strangers complain of the excessive humidity.

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[5] Alfred Angot: Études sur le climat de la France: Régime des pluies, Part I, *Ann. Bureau Central Météorol.*, 1911, Vol. 1, Paris, 1916, pp. 109–236. Résumé in *Ann. de Géogr.*, Vol. 26, 1917, pp. 255–272.

Human Adaptation to Natural Conditions

There are in France other regions of impermeable rock; and, while the influence of the oceanic climate diminishes eastward, it is still apparent far beyond our region. But here in the west the influence of these conditions appears the more pronounced because of the human adaptations that have been made to them. Three of these adaptations are particularly striking: the grouping of population, communications, and the separation of the cultivated fields.

Population Grouping

Dispersed dwellings accommodate an important part of the population. Not that all are isolated, however: the common type of settlement is intermediate between that of complete dispersion, nothing but isolated houses, as in Chalosse (southwestern Aquitaine), and perfect agglomeration with all the houses grouped round the church, as in Beauce. Every village of the western region includes two parts: the *bourg*, or little market center clustered round the church, and the *écarts*, or dispersed houses. These latter either are gathered into hamlets, like the *plou* of Lower Brittany, or into groups of two or three, or, as often, stand isolated. The origin of this arrangement is still obscure; but, whatever it may be, it is clearly well adapted to physical conditions. It is made possible (not determined) by the distribution of water which, furnished by the humid climate and retained by the impermeable soil, can be found everywhere near the surface. Exceptions appear only where the surface rock is permeable, for example in the *plaines* of Caen and Argentan and in a part of Alençon, where habitations are perforce grouped in a fashion different from the rest of the region. The countryman of the West prefers his isolated *borde* (little property) to the village. It is better adapted to his method of cultivation. What he wants is to be close to his fields to curtail as far as possible transportation and movement back and forth.

Means of Communication

Difficulty of communication that weighs on all forms of activity is another consequence of physical conditions.

A century ago the main highways were few and ill-kept, and the country roads were almost impracticable. In the West they have a peculiar physiognomy. They are narrow and overtopped on either side with sloping banks over which trees, bushes, and briars form a tangle of vegetation. The roads are as deep-sunk as trenches; when it rains, streams of water course along them; and at all times they hold thick mud. Carriages are mired therein; pedestrians prefer to travel through the fields where the pathways, or *chintres*, are better suited to their needs.

A journey by such roads is quite an undertaking. The physician Réaumur described travel in the Vendée in the early eighteenth century: "The axles of the little wheels of my coach," he wrote, "were constantly mired, and during the ten leagues of the journey it was continually necessary to widen the road: progress was made only with the help of the soldiers whose business it was to clear the way."[6] The deep-sunk roads of this region which lent themselves so well to ambuscade became famous by the "wars of the Vendée" during the French Revolution. Today the highways have been improved, but the byways remain almost in the same state; the difficulty of transportation is ameliorated but not eliminated; it is still characteristic of western France. Physical circumstances are largely accountable: the impervious rocks hold the water, and the humid climate loosens the soil; but the slopes and hedgerows that enclose the roads are responsible in part.

THE "BOCAGE"

Not only the roads but the fields also are bordered by sloping banks, called *fossés*[7] in the West, which enclose them as entrenchments. Entrance to a field is only by way of its barred gate. The hedges are not simply boundary fences; each one covers considerable ground and is quite impenetrable, a little thicket—one might even say a little wood. Concerning their origin and purpose nothing is known. Whatever it may be, they present the most striking feature of the western landscape; they give it the appearance of *bocage*, that is to say country covered by thickets of trees and shrubbery. The *bocage* was formerly more developed than it is today; it is now restricted for the most part to the impermeable soils, whereas once it covered permeable soils as well, in Lower Normandy for example. The influence of physical conditions is manifest. It is, however, a particularly important point that the limit of the *bocage* coincides with that of the impermeable rocks only to the south of the Loire; to the north it cuts in two the uniform stretch of the great impervious clay-with-flints plateau. Now this limit (Fig. 1) is exactly coincident with that accounted by popular speech as the beginning of the West. To the country folk the West is essentially the region of *bocage*.

In this respect it forms a contrast with the surrounding countries. When once the border of the *bocage* is crossed the landscape is strikingly changed—

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[6] *Mémoires de l'Acad. Royale des Sci.*, Jan. 21, 1921. On the same region see Dupin: Mémoire statistique du département des Deuz-Sèvres, Paris, An. 12, p. 138. Similar testimony abounds for all parts of the West; for Bas-Maine see Musset, *op. cit.*, pp. 319–324; for Anjou, Leclerc-Thouin: De l'agriculture de l'Ouest de la France, etudiée plus particulièrement dans le département de Maine-et-Loire, Paris, 1843, pp. 170–174; for the Norman Bocage, J. Lecoeur: Esquisses du Bocage normand, Condé-sur-Noireau, 1883; for Brittany, J. Letaconnoux: Les subsistances et le commerce des grains en Bretagne au XVIIIe siècle, Rennes, 1909, p. 253.

[7] *Fossé* is literally "ditch," but in the west of France it is used in exactly the inverse sense, i. e. as "bank."

no more hedges, but a monotonous expanse of fields defined only by invisible bounds or conventional lines and stretching out to an infinite horizon. Such a country is *plaine*, a word of precisely contrary sense to *bocage*. Within the *bocage* itself *plaine* is used to describe areas free from *bocage*—whether of considerable extent, as on the permeable soils, or of limited size, as certain land used only for pasture or the ensemble of tiny fields which several neighboring farmers may have thrown together for cultivation in common.

The Isolation of the West

Hedge-enclosed fields, scarcely traversable roads, dispersed dwellings, all contribute to the same effect. The country is parceled up to an extreme degree, and each part is isolated. Every village, hamlet, or isolated farm is sufficient to itself. To travel from his field, his hamlet, his village is a serious matter for the countryman. Occasions for meeting his fellows are rare. They are confined to Sundays, when the people go to town to hear mass or to make their purchases; and to the fairs which at long intervals enliven for a day the little towns ordinarily dead. These circumstances are reflected in the character of the people. The customary portrait of the people of the West is not altogether satirical. It is said that they are suspicious of the new and strange; they avoid or receive with reluctance the outsider, *le horsain* or *le hors-venu*, as the Normans call him; they reject innovations, clinging tenaciously to the traditional. A French writer, M. Siegfried, in a penetrating study [8] has shown how the political life of the West, this stronghold of French conservatism, is in sum the consequence of geographical conditions.

Subdivisions of Western France

Uniform as a whole, subdivided to an extreme degree in detail, markedly different from the surrounding regions—such is western France. Within it one cannot recognize any natural regions, or *pays*, as in the Paris Basin for example.[9] Here the only living unit is the village. Only on the border can *pays* be distinguished by contrast with the country beyond: the *pays* of Auge, lying between the clay-with-flints plain on the east and the plains of Lower Normandy on the west; the Perche, defined by contrast with the neighboring plain of Beauce.[10] As to the names "Bocage normand" and "Bocage vendéen," they are only general terms applied without any precise limits. The old names of provinces—Normandy, Maine, Anjou, Brittany, Poitou—are of historic origin and have no true geographical significance. Other old territorial divisions of vague bounds are occasionally preserved by local tradition—Léon, Cornouaille, Broweroch—but often they have entirely fallen out of use, as in Brittany those of Penthièvre, Trégorrois, and Porhoet.

Yet certain parts of the landscape detach themselves from the general picture by virtue of some trait of individuality. Such are the rare *plaines* occurring in the midst of the *bocage;* the *plaines* of Caen and Argentan, the champaign of Alençon, the plain or *bas-pays* of the east of Cotentin; the valleys of the larger rivers with alluvial floors devoted to market gardens and slopes given to vine cultivation, to which the term *val* is usually applied—val d'Anjou, val de Loire, val du Loir—and, in Anjou, that curious valley of the Authion known simply as "la Vallée;" the low, marshy regions along the coast now more or less drained (*marais*)—the marshes of Carentan to the south of Cotentin, of Dol in Brittany, the Breton and Poitevin marshes in Vendée. And finally there is a distinction born of proximity to the sea. In Brittany, where the extreme indentation of the shore line has intensified maritime pursuits the narrow littoral band shows a distinctive type of life; the people are both farmers and sailors. The farmer keeps the typical traits of the West; the sailor, engaged in navigation and fishing, makes outside contacts to which he succumbs in the end though he may be mistrustful in the beginning. Thus is created the difference between maritime Brittany, or Armor (the country of the sea), open to the outside world, and interior Brittany, or Arc'hoat (the wooded country), the most backward part of the entire West.[11]

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[8] André Siegfried: Tableau politique de la France de l'Ouest sous la Troisième République, Paris, 1913. See the review by Paul Vidal de la Blache, *Ann. de Géogr.*, Vol. 23–24, 1914–15, pp. 261–264.

[9] See Lucien Gallois: Régions naturelles et noms de pays: Étude sur la région parisienne, Paris, 1908.

[10] René Musset: Le Perche, nom de pays, *Ann. de Géogr.*, Vol. 28, 1919, pp. 342–359.

RECENT CHANGES

The picture we have drawn is in process of transformation. This is especially so in respect of agricultural development.

Nothing could be more monotonously uniform than the old-time agriculture of the West; a single system prevailed throughout the region. Land was divided into two parts, the fields devoted to crops, far the less extensive in area, and the "idle" land which included the fallow fields and the pastures. The fallow fields were left for 2 or 3 or 10 years and 15 or 20 years; while the pastures consisted of the *landes*, deforested areas never cultivated. As the soil is naturally deficient in plant foods and lacks the two essential elements, lime and phosphoric acid, only the inferior cereals could be grown, barley, rye, oats, and buckwheat, from which was made a coarse bread eaten as sops or in thin cakes. The animals for lack of phosphate of lime were undersized though hardy. This inferior agriculture had but one object, to provide for the needs of the people themselves, and for this it did not always suffice. The West was too isolated and subdivided to engage in foreign commerce; the sole export was cattle in limited number—the only product, as an old writer has said, "that could transport itself."

But towards the middle of the nineteenth century the opening up of the West began. The central administration of France paid careful regard to the development of communications, constructing roads and railways and bringing the various regions of the country in touch with each other and with the outside. This was the point of departure for a complete revolution in agricultural methods. The soil was enriched by the addition of lime and fertilizers; wheat began to replace rye and to make inroads on the acreage planted to other cereals. The West, which till then had asked only its daily bread and had cultivated grain in preference to raising cattle, now began farming for export and concentrated its efforts on those products it could sell to the best advantage; it turned to its natural vocation, cattle raising favored by the good pasturage of this humid land.

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[11] Emmanuel de Martonne: The Real France, *Journ. of Geogr.*, Vol. 18, 1919, pp. 81–94.

The agricultural transformation of the West has tended to give the region a diversified aspect unknown before. The movement began at different times in different parts, and not all regions have progressed at the same pace. On the whole the change commenced on the eastern border and traveled westward; it has been completed in Normandy, Perche, Maine, and almost all Upper Brittany; it is in progress in the Norman Bocage and the north of Cotentin; it has scarcely begun in Lower Brittany, where there are great stretches of *landes* and fallow fields.

Nor has transformation everywhere followed the same course. The uniform agriculture of former times has given way to different adaptations in different places—on the border, within the *bocages*, on the *plaines*. Live stock is bred in the *bocage* and fattened on the *plaines*. Thus the young animals, horses and cattle, raised in Cotentin, the Norman Bocage, and Bas-Maine are sent to the *plaines* of Lower Normandy; those of Vendée to the *plaines* of Haut-Poitou and Charentes; the Perche is similarly associated with the Beauce in the raising of horses. The building of railways has permitted the extension of such relations. Cotentin, the Norman Bocage, Bas-Maine, Anjou, Vendée, and certain corners of Brittany ship young animals long distances. Bas-Maine, for instance, sends cattle to be fattened into Poitou, northern France, and even Belgium; Léon, in Brittany, sends foals to the plain of Valence whence they are finally sold to the vine-growing regions of the Midi. The most important branch of the pastoral industry, cattle raising, is specialized into three distinct types. Such sections as Perche, Cotentin, the Norman Bocage, Bas-Maine, northern Anjou, and Vendée are interested primarily in the breeding of animals to be sold while young. In other sections, devoted to dairying, stock is largely limited to milch cows; such is Brittany, a great producer of milk and butter. Other areas—the *pays* of Auge, the region of Merlerault, the *plaines* of Lower Normandy—combine dairying with the fattening of cattle; southern Anjou and Mauges have almost entirely specialized in the latter. In the West generally the raising of meat cattle is on the increase.

CONCLUSION

Present-day evolution is tending to a profound modification of the life of western France, making of it a region less isolated and less uniform. The process, however, is far from being complete; it has transformed only the economic life and this not everywhere to the same extent; certain remote corners of Brittany still present a faithful picture of the former life of the entire west country. Modification is on the surface; the heart of things remains as of old. The modern spirit has penetrated only the border region: the mentality of the people as a whole, molded by centuries of isolation, is scarcely changed. In France the West represents the conservative, tradition-keeping element, accepting material progress but jealously retentive of the traditional modes of thought and action.